

Squire, Sanders & Dempsey

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*U.S. Offices:
Cleveland, Ohio
Jacksonville, Florida
Miami, Florida
New York, New York
Phoenix, Arizona
Washington, D.C.*

*Counsellors at Law
Huntington Center
41 South High Street
Columbus, Ohio 43215*

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Telephone: (614) 365-2700
EPA, Region III, (614) 365-2499
R&C, PA/HD Section

*International Offices:
Brussels, Belgium
Prague, Czechoslovakia*

*Direct Dial Number
(614) 365-2702*

November 12, 1991

Cynthia Nadolski, Esq.
Office of Regional Counsel
United States Environmental
Protection Agency, Region III
841 Chestnut Street
Philadelphia, Pennsylvania 19107

Re: Palmerton Zinc Site - Removal Action for Lead

Dear Cynthia:

At our meeting on October 11, 1991, we gave you copies of a paper by Gradient Corp. "Preliminary Evaluation of September 6 and 16, 1991 Memos from Roy Smith, Ph.D. to Tony Koller, et al." (October 10, 1991). Please ensure this paper is in the Administrative Record of this matter. I have enclosed another copy for your convenience.

Very truly yours,



James F. Allen

JFA/llc
Encl.
cc: Robert P. Marshall

AR500132

MEMORANDUM

To: Robert P. Marshall, Esq. **Date:** October 10, 1991
From: Barbara D. Beck, Ph.D., DABT
Thomas D. Gauthier, Ph.D.
Subject: Preliminary Evaluation of September 6 and 16, 1991 Memos from Roy Smith, Ph.D. to Tony Koller et al.

We have evaluated the memoranda with respect to the conclusions based on the results of the 24 home residential area sampling study performed in Palmerton by EPA Region III. We believe that Dr. Smith has conducted a thorough evaluation of the sampling results but believe that the conclusions are not sufficiently supported by the data. Our concerns center primarily on the lack of evidence (based on either modeled or monitored data) of elevated blood lead levels in Palmerton children, and the reliance on XRF data (which should be used only as a screening tool) to conclude that air is a major source of contamination.

Lack of Indication of Adverse Health Effects from Lead

- Recent Palmerton data indicate that blood lead is not elevated

Remediation decisions should be guided by actual blood lead data if they are available. Recently, Palmerton Hospital officials reported that 25% of eligible Palmerton children had their blood analyzed for lead. Hospital officials only released summary test results. They reported that nearly 90% of children 6 years old or younger had blood lead levels 10 ug/dl or less, while 99% of the children had blood lead levels 15 ug/dl or less. These data indicate that the Palmerton children have blood lead levels lower than many U.S. cities, including Philadelphia. The geometric mean blood lead level that we estimated for the children was 5.4 ug/dl, approximately the national average predicted for 1990 (4 to 5 ug/dl). Thus, blood lead levels in Palmerton children are not elevated. To order immediate soil or dust removal action when blood lead levels are not elevated (and a more comprehensive blood lead study by ATSDR is currently underway) and when the effectiveness of soil removal is far from demonstrated would be premature.

- The 500 ppm soil cleanup level for lead in soil is not justified

There is little basis for selection of 500 ppm as a cleanup level for lead. The October 1991 Lead Statement no longer includes the 500 to 1000 ppm "recommendation" that has formerly been cited as justification for the 1989 OSWER Superfund Guidance. The decision to base removal action on this level is neither technically nor methodologically sound and does not reflect the true extent of the hazard posed by lead in Palmerton soils. Proper evaluation of the specific nature of lead

contamination in Palmerton, including speciation, will be necessary to determine whether a hazard currently exists to Palmerton residents.

- Blood lead studies should be conducted to complement environmental surveys

The October 1991 CDC Lead Statement (p.76) states that "Environmental surveys that are designed to identify the common sources of childhood lead exposure can be undertaken in conjunction with or as a complement to community-based surveys of blood lead levels. Environmental surveys do not, however, replace measurement of children's blood lead levels." It is clear that environmental health data that will be taken at part of the on-going ATSDR study should be considered in any future remediation actions. *

Reliance on XRF Data

- XRF is a screening technique and only yields semiquantitative results

The proposed Administrative Order on Consent is based in part upon data generated by X-Ray Fluorescence (XRF) analysis which the Field Screening Methods Catalog User's Guide (U.S. EPA Office of Emergency and Remedial Response, Washington, DC EPA/540/2-88/005) classifies as a screening method providing only semiquantitative data. The technical contact cited in the User's Guide for the XRF screening method is Dr. Thomas Spittler. Dr. Spittler has indicated that this screening method is suitable for obtaining a "preliminary evaluation of sites in a timely fashion and to select those samples to be sent for the highest level of analysis in the Contract Laboratory Program."

- Lead concentrations measured by XRF in porch dust and house dust are significantly higher than lead concentrations measured by AA in the same sample.

A paired t-test conducted on samples analyzed for lead by XRF and Atomic Absorption (AA) spectroscopy indicates that there is an analytical bias between the two methods when analyzing house dust and porch dust. This bias is graphically illustrated on the attached figure produced by Dr. Roy Smith. The figure indicates that lead concentrations in porch dust measured by XRF are consistently higher than lead concentrations measured in the same porch dust samples by AA. The figure also indicates that XRF is a good screening tool for lead in soils and road dust.

- Opposite conclusions may be drawn depending upon which set of data (XRF or AA) are used.

The analytical bias observed for lead in porch dust leads to opposite conclusions depending if porch dust lead levels are compared to soil levels by AA or XRF. The XRF data suggest that porch dust lead levels are significantly higher than soil lead levels; however, based on AA results, there is no significant difference between soil lead levels and porch dust levels. The AA results also suggest that there is no significant difference between house dust lead levels and soil lead levels.

- There is no good evidence to conclude that airborne deposition is a major source.

Dr. Smith suggests that absolute and relative metals concentrations may be used to demonstrate that airborne deposition is a significant source; however, this conclusion is based upon

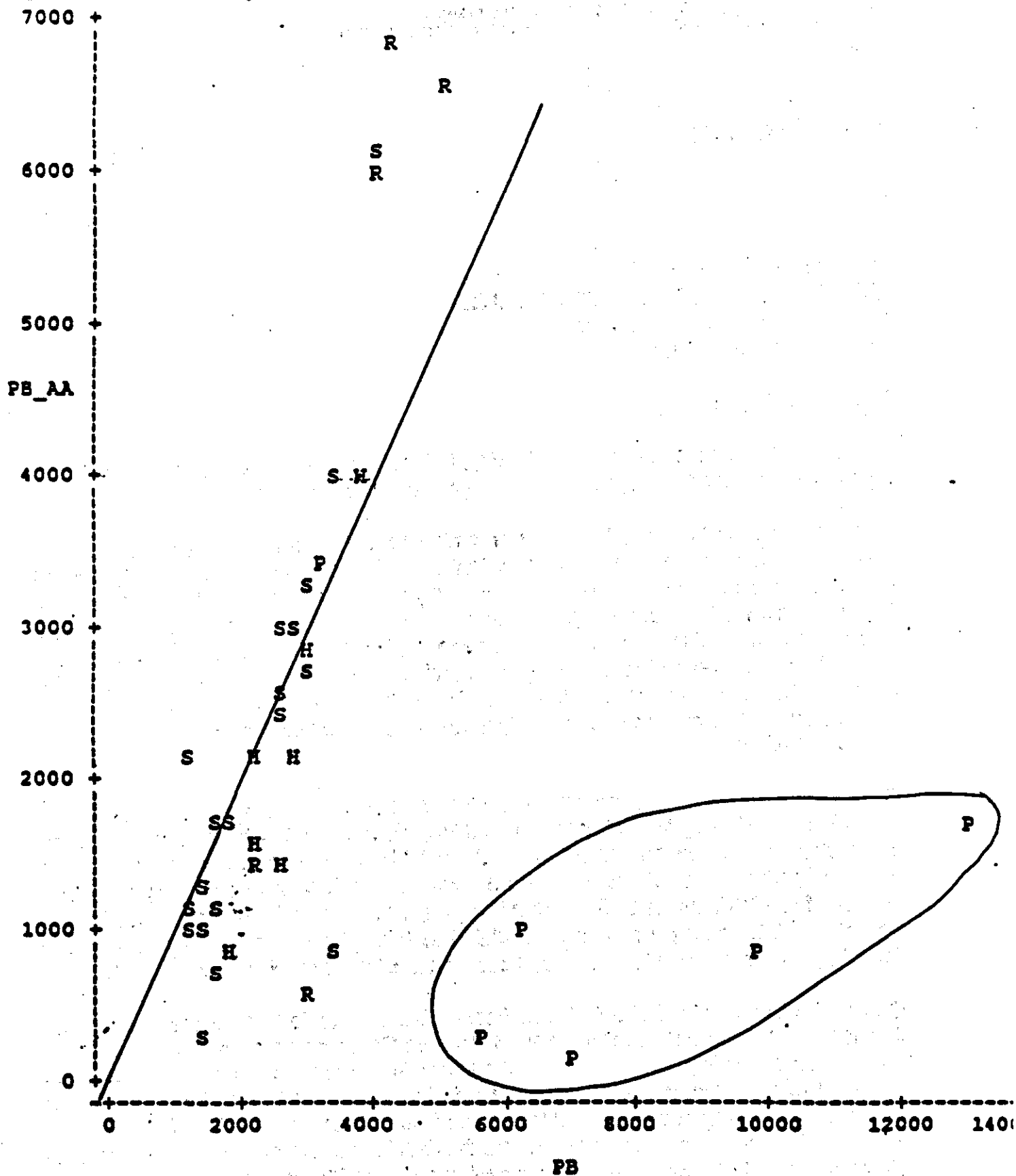
XRF data which are only semiquantitative. In addition XRF tends to overpredict levels of lead in porch dust and house dust compared to AA. This can lead to a biased conclusion if the conclusion is based on absolute concentrations.

- Soil lead levels measured in Jim Thorpe are not significantly different from soil lead levels measured in Palmerton

The background data collected from Jim Thorpe, PA suggest that there is no significant difference between soil lead levels in Jim Thorpe and soil lead levels measured in Palmerton, PA. This fact suggests that the levels of lead in soil may be due to generally high background levels in the Palmerton/Jim Thorpe area.

Furst, G.A., Tillinghast, V., and Spittler, T. "Screening For Metals at Hazardous Waste Sites: A Rapid Cost-Effective Technique Using X-Ray Fluorescence." Management of Uncontrolled Hazardous Waste Sites, Washington, DC, November 4-6, 1985. future remediation actions.

Plot of PB_AA*PB. Symbol is value of MEDIUM .



NOTE: 176 obs had missing values. 3 obs hidden.

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